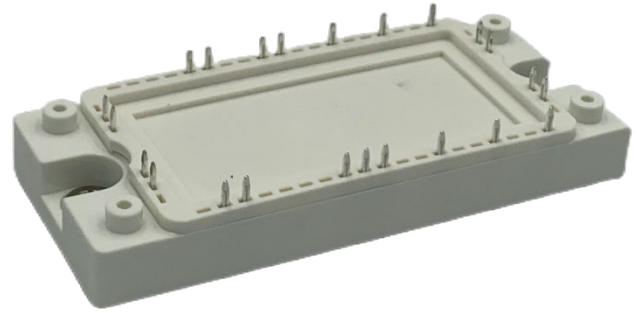


### Electrical Features

- Trench/Fieldstop IGBT
- $V_{CEsat}$  with positive Temperature Coefficient
- Low  $V_{CEsat}$

### Typical Applications

- Motor Drives
- Servo Drives
- Auxiliary Inverters



### Mechanical Features

- High power density
- Integrated NTC temperature sensor
- Copper base plate
- Solder contact technology
- Standard housing

### IGBT, Inverter

| Maximum Rated Values   |                                      |   |          |       |      |          |
|------------------------|--------------------------------------|---|----------|-------|------|----------|
| Symbol                 | Item                                 | Conditions  | Rating   | Unit  |      |          |
| IGBT                   |                                      |   |          |       |      |          |
| $V_{CES}$              | Collector-emitter voltage            | $T_{vj}=25^{\circ}C$  | 1200     | V     |      |          |
| $V_{GES}$              | Gate-emitter voltage                 | -   | $\pm 20$ | V     |      |          |
| $I_C$                  | Collector current,DC                 | $T_C=80^{\circ}C, T_{vj}=175^{\circ}C$                            | 50       | A     |      |          |
| $I_{CRM}$              | Repetitive peak collector current    | $t_p=1ms$   | 100      | A     |      |          |
| $P_{tot}$              | Total power dissipation              | $T_C=25^{\circ}C, T_{vj}=175^{\circ}C$                            | 278      | W     |      |          |
| Characteristics Values |                                      |   |          |       |      |          |
| Symbol                 | Item                                 | Conditions  | Values   |       |      | Unit     |
| IGBT                   |                                      |   | Min.     | Typ.  | Max. |          |
| $I_{CES}$              | Collector-emitter cut-off current    | $V_{CE}=1200V, V_{GE}=0V, T_{vj}=25^{\circ}C$                     | -        | -     | 1    | mA       |
| $I_{GES}$              | Gate leakage current                 | $V_{CE}=0V, V_{GE}=20V, T_{vj}=25^{\circ}C$                       | -        | -     | 100  | nA       |
| $V_{GE(th)}$           | Gate-emitter threshold voltage       | $I_C=1.5mA, V_{CE}=V_{GE}, T_{vj}=25^{\circ}C$                    | 5.2      | 5.7   | 6.6  | V        |
| $V_{CEsat}$            | Collector-emitter saturation voltage | $I_C=50A$<br>$V_{GE}=15V$<br>$T_{vj}=25^{\circ}C$                 | -        | 2.25  | 3.1  |          |
|                        |                                      | $T_{vj}=125^{\circ}C$   | -        | 2.82  | -    |          |
|                        |                                      | $T_{vj}=150^{\circ}C$   | -        | 2.93  | -    |          |
| $C_{ies}$              | Input capacitance                    | $V_{CE}=25V, V_{GE}=0V$<br>$f=1MHz, T_{vj}=25^{\circ}C$           | -        | 3.535 | -    | nF       |
| $C_{oes}$              | Output capacitance                   |   | -        | 0.231 | -    |          |
| $C_{res}$              | Reverse transfer capacitance         |   | -        | 0.119 | -    |          |
| $Q_G$                  | Gate charge                          | $V_{CC}=600V, I_C=50A$<br>$V_{GE}=-15...+15V, T_{vj}=25^{\circ}C$ | -        | 0.201 | -    | $\mu C$  |
| $R_g$                  | Internal gate resistance             | $T_{vj}=25^{\circ}C$  | -        | -     | -    | $\Omega$ |

| t <sub>d(on)</sub>           | Turn-on delay time                     | V <sub>CC</sub> =600V<br>I <sub>C</sub> =50A<br>V <sub>GE</sub> =±15V<br>R <sub>G(on)</sub> =51Ω<br>R <sub>G(off)</sub> =51Ω          | T <sub>vj</sub> =25°C  | -     | 205.9 | -                | ns |
|------------------------------|--|---|------------------------|-------|-------|------------------|----|
|                              |  |   | T <sub>vj</sub> =125°C | -     | 240.5 | -                |    |
|                              |  |   | T <sub>vj</sub> =150°C | -     | 250.9 | -                |    |
| t <sub>r</sub>               | Rise time                              |   | T <sub>vj</sub> =25°C  | -     | 163.9 | -                |    |
|                              |  |   | T <sub>vj</sub> =125°C | -     | 177.9 | -                |    |
|                              |  |   | T <sub>vj</sub> =150°C | -     | 179.6 | -                |    |
| t <sub>d(off)</sub>          | Turn-off delay time                    |   | T <sub>vj</sub> =25°C  | -     | 445.0 | -                |    |
|                              |  |   | T <sub>vj</sub> =125°C | -     | 748.8 | -                |    |
|                              |  |   | T <sub>vj</sub> =150°C | -     | 760.4 | -                |    |
| t <sub>f</sub>               | Fall time                              |   | T <sub>vj</sub> =25°C  | -     | 203.9 | -                |    |
|                              |  |   | T <sub>vj</sub> =125°C | -     | 328.5 | -                |    |
|                              |  |   | T <sub>vj</sub> =150°C | -     | 335.6 | -                |    |
| E <sub>on</sub>              | Turn-on energy (per pulse)             | V <sub>CC</sub> =600V, I <sub>C</sub> =50A<br>V <sub>GE</sub> =±15V, R <sub>G(on)</sub> =51Ω<br>di/dt=480A/μs(T <sub>vj</sub> =150°C) | T <sub>vj</sub> =25°C  | -     | 15.17 | -                | mJ |
|                              |  |   | T <sub>vj</sub> =125°C | -     | 20.44 | -                |    |
|                              |  |   | T <sub>vj</sub> =150°C | -     | 21.26 | -                |    |
| E <sub>off</sub>             | Turn-off energy (per pulse)            |   | T <sub>vj</sub> =25°C  | -     | 3.09  | -                |    |
|                              |  |   | T <sub>vj</sub> =125°C | -     | 4.96  | -                |    |
|                              |  |   | T <sub>vj</sub> =150°C | -     | 5.71  | -                |    |
| SC data                      | Short-circuit current                  | V <sub>CC</sub> =600V, V <sub>GE</sub> ≤15V, T <sub>vj</sub> =125°C<br>V <sub>CES</sub> ≤1200V, t <sub>p</sub> ≤10μs                  | -                      | 200   | -     | A                |    |
| R <sub>thJC</sub>            | Thermal resistance, junction to case   | Per IGBT  | -                      | -     | 0.54  | K/W              |    |
| R <sub>thCH</sub>            | Thermal resistance, case to heatsink   | Per IGBT λgrease=1W/(m·K)   | -                      | 0.295 | -     | K/W              |    |
| T <sub>vjop</sub>            | Temperature under switching conditions |   | -40                    |       | 150   | °C               |    |
| <b>Diode, Inverter</b>       |  |   |                        |       |       |                  |    |
| <b>Maximum Rated Values</b>  |  |   |                        |       |       |                  |    |
| Symbol                       | Item                                   | Conditions  | Rating                 |       |       | Unit             |    |
| V <sub>RRM</sub>             | Repetitive peak reverse voltage        | T <sub>vj</sub> =25°C   | 1200                   |       |       | V                |    |
| I <sub>F</sub>               | Forward current, DC                    | T <sub>C</sub> =80°C, T <sub>vj</sub> =175°C  | 50                     |       |       | A                |    |
| I <sub>FRM</sub>             | Repetitive peak forward current        | t <sub>p</sub> =1ms   | 100                    |       |       | A                |    |
| I <sup>2</sup> t             | I <sup>2</sup> t-value                 | V <sub>R</sub> =0V, t <sub>p</sub> =10ms, T <sub>vj</sub> =125°C  | 667                    |       |       | A <sup>2</sup> s |    |
| <b>Characteristic Values</b> |  |   |                        |       |       |                  |    |
| V <sub>F</sub>               | Continuous forward voltage             | I <sub>F</sub> =50A<br>V <sub>GE</sub> =0V  | T <sub>vj</sub> =25°C  | Min.  | Typ.  | Max.             | V  |
|                              |  |   | T <sub>vj</sub> =125°C | -     | 2.60  | 3.6              |    |
|                              |  |   | T <sub>vj</sub> =150°C | -     | 2.34  | -                |    |
| I <sub>RM</sub>              | Peak reverse recovery current          |   | T <sub>vj</sub> =25°C  | -     | 16.5  | -                | A  |
|                              |  |   | T <sub>vj</sub> =125°C | -     | 22.2  | -                |    |
|                              |  |   | T <sub>vj</sub> =150°C | -     | 24.0  | -                |    |
| t <sub>rr</sub>              | Reverse recovery time                  | I <sub>F</sub> =50A<br>V <sub>GE</sub> =-15V<br>-di <sub>F</sub> /dt=480A/μs<br>(T <sub>vj</sub> =150°C)                              | T <sub>vj</sub> =25°C  | -     | 95.48 | -                | ns |
|                              |  |   | T <sub>vj</sub> =125°C | -     | 950.2 | -                |    |
|                              |  |   | T <sub>vj</sub> =150°C | -     | 992.8 | -                |    |
| Q <sub>r</sub>               | Recovered charge                       |   | T <sub>vj</sub> =25°C  | -     | 1.74  | -                | μC |
|                              |  |   | T <sub>vj</sub> =125°C | -     | 8.32  | -                |    |
|                              |  |   | T <sub>vj</sub> =150°C | -     | 9.99  | -                |    |

|                   |  |   |                        |      |      |     |    |
|-------------------|--|---|------------------------|------|------|-----|----|
| E <sub>rec</sub>  | Reverse recovery energy                |   | T <sub>vj</sub> =25°C  | -    | 0.99 | -   | mJ |
|                   |  |   | T <sub>vj</sub> =125°C | -    | 2.32 | -   |    |
|                   |  |   | T <sub>vj</sub> =150°C | -    | 2.81 | -   |    |
| R <sub>thJC</sub> | Thermal resistance, junction to case   | per diode                                   | -                      | -    | 0.81 | K/W |    |
| R <sub>thCH</sub> | Thermal resistance, case to heatsink   | Per diode, λ <sub>grease</sub> =1 W/(m • K) | -                      | 0.44 | -    | K/W |    |
| T <sub>vjop</sub> | Temperature under switching conditions |   |                        | -40  | 150  | °C  |    |

**Diode, Rectifier**

| Maximum Rated Values |   |   |        |  |  |                  |
|----------------------|---|---|--------|--|--|------------------|
| Symbol               | Item                                    | Conditions                                    | Rating |  |  | Unit             |
| V <sub>RRM</sub>     | Repetitive peak reverse voltage         | T <sub>vj</sub> =25°C                         | 1800   |  |  | V                |
| I <sub>FRMSM</sub>   | Maximum RMS forward current per chip    | T <sub>C</sub> =80°C                          | 70     |  |  | A                |
| I <sub>RMSM</sub>    | Maximum RMS current at rectifier output | T <sub>C</sub> =80°C                          | 80     |  |  | A                |
| I <sub>FSM</sub>     | Surge forward current                   | t <sub>p</sub> = 10ms, T <sub>vj</sub> =150°C | 420    |  |  | A                |
| I <sup>2</sup> t     | I <sup>2</sup> t-value                  | T <sub>p</sub> = 10ms, T <sub>vj</sub> =150°C | 882    |  |  | A <sup>2</sup> s |

| Characteristic Values |  |   |                        |       |      |      |    |
|-----------------------|--|---|------------------------|-------|------|------|----|
| Symbol                | Item                                   | Conditions                                  | Values                 |       |      | Unit |    |
|                       |  |   | Min.                   | Typ.  | Max. |      |    |
| V <sub>F</sub>        | Continuous forward voltage             | I <sub>F</sub> =50A<br>V <sub>GE</sub> =0V  | T <sub>vj</sub> =25°C  | -     | 1.43 | 1.8  | V  |
|                       |  |   | T <sub>vj</sub> =125°C | -     | 1.35 | -    |    |
|                       |  |   | T <sub>vj</sub> =150°C | -     | 1.31 | -    |    |
| I <sub>R</sub>        | Reverse current                        | V <sub>R</sub> =1800V                       | T <sub>vj</sub> =25°C  | -     | -    | 10   | μA |
|                       |  |   | T <sub>vj</sub> =125°C | -     | -    | -    |    |
|                       |  |   | T <sub>vj</sub> =150°C | -     | -    | -    |    |
| R <sub>thJC</sub>     | Thermal resistance, junction to case   | per diode                                   | -                      | -     | 0.85 | K/W  |    |
| R <sub>thCH</sub>     | Thermal resistance, case to heatsink   | Per diode, λ <sub>grease</sub> =1 W/(m • K) | -                      | 0.465 | -    | K/W  |    |
| T <sub>vjop</sub>     | Temperature under switching conditions |   |                        | -40   | 150  | °C   |    |

**IGBT, Brake-Chopper**

| Maximum Rated Values |                                   |   |        |  |  |      |
|----------------------|-----------------------------------|---|--------|--|--|------|
| Symbol               | Item                              | Conditions                                    | Values |  |  | Unit |
| V <sub>CES</sub>     | Collector-emitter voltage         | T <sub>vj</sub> =25°C                         | 1200   |  |  | V    |
| V <sub>GES</sub>     | Gate-emitter voltage              | -   | ±20    |  |  | V    |
| I <sub>C</sub>       | Collector current,DC              | T <sub>C</sub> =100°C, T <sub>vj</sub> =175°C | 25     |  |  | A    |
| I <sub>CRM</sub>     | Repetitive peak collector current | t <sub>p</sub> =1ms                           | 50     |  |  | A    |
| P <sub>tot</sub>     | Total power dissipation           | T <sub>C</sub> =25°C, T <sub>vj</sub> =175°C  | 151    |  |  | W    |

| Characteristic Values |                                   |   |        |      |      |      |
|-----------------------|-----------------------------------|---|--------|------|------|------|
| Symbol                | Item                              | Conditions  | Values |      |      | Unit |
|                       |                                   |   | Min.   | Typ. | Max. |      |
| IGBT                  |                                   |   |        |      |      |      |
| I <sub>CES</sub>      | Collector-emitter cut-off current | V <sub>CE</sub> =1200V, V <sub>GE</sub> =0V, T <sub>vj</sub> =25°C              | -      | -    | 1    | mA   |
| I <sub>GES</sub>      | Gate leakage current              | V <sub>CE</sub> =0V, V <sub>GE</sub> =20V, T <sub>vj</sub> =25°C                | -      | -    | 100  | nA   |
| V <sub>GE(th)</sub>   | Gate-emitter threshold voltage    | I <sub>C</sub> =0.5mA, V <sub>CE</sub> =V <sub>GE</sub> , T <sub>vj</sub> =25°C | 5.5    | 5.9  | 6.6  | V    |

|                              |  |   |                       |       |       |             |    |
|------------------------------|--|---|-----------------------|-------|-------|-------------|----|
| $V_{CEsat}$                  | Collector-emitter saturation voltage   | $I_C=25A$<br>$V_{GE}=15V$   | $T_{vj}=25^{\circ}C$  | -     | 1.90  | 2.5         | V  |
|                              |  |   | $T_{vj}=125^{\circ}C$ | -     | 2.30  | -           |    |
|                              |  |   | $T_{vj}=150^{\circ}C$ | -     | 2.49  | -           |    |
| $C_{ies}$                    | Input capacitance                      | $V_{CE}=25V, V_{GE}=0V$<br>$f=1MHz, T_{vj}=25^{\circ}C$   | -                     | 1.77  | -     | nF          |    |
| $C_{oes}$                    | Output capacitance                     |   | -                     | 0.17  | -     |             |    |
| $C_{res}$                    | Reverse transfer capacitance           |   | -                     | 0.06  | -     |             |    |
| $Q_G$                        | Gate charge                            | $V_{CC}=600V, I_C=25A$<br>$V_{GE}=-15...+15V, T_{vj}=25^{\circ}C$                               | -                     | 0.171 | -     | $\mu C$     |    |
| $R_g$                        | Internal gate resistance               | $T_{vj}=25^{\circ}C$  | -                     | -     | -     | $\Omega$    |    |
| $t_{d(on)}$                  | Turn-on delay time                     | $V_{CC}=600V$<br>$I_C=25A$<br>$V_{GE}=\pm 15V$<br>$R_{G(on)}=51\Omega$<br>$R_{G(off)}=51\Omega$ | $T_{vj}=25^{\circ}C$  | -     | 96.6  | -           | ns |
|                              |  |   | $T_{vj}=125^{\circ}C$ | -     | 152.1 | -           |    |
|                              |  |   | $T_{vj}=150^{\circ}C$ | -     | 159.6 | -           |    |
| $t_r$                        | Rise time                              |   | $T_{vj}=25^{\circ}C$  | -     | 53.6  | -           |    |
|                              |  |   | $T_{vj}=125^{\circ}C$ | -     | 80.2  | -           |    |
|                              |  |   | $T_{vj}=150^{\circ}C$ | -     | 86.0  | -           |    |
| $t_{d(off)}$                 | Turn-off delay time                    |   | $T_{vj}=25^{\circ}C$  | -     | 101.8 | -           |    |
|                              |  |   | $T_{vj}=125^{\circ}C$ | -     | 308.6 | -           |    |
|                              |  |   | $T_{vj}=150^{\circ}C$ | -     | 326.1 | -           |    |
| $t_f$                        | Fall time                              |   | $T_{vj}=25^{\circ}C$  | -     | 359.1 | -           |    |
|                              |  |   | $T_{vj}=125^{\circ}C$ | -     | 531.4 | -           |    |
|                              |  |   | $T_{vj}=150^{\circ}C$ | -     | 681.2 | -           |    |
| $E_{on}$                     | Turn-on energy (per pulse)             | $T_{vj}=25^{\circ}C$  | -                     | 2.22  | -     | mJ          |    |
|                              |  | $T_{vj}=125^{\circ}C$   | -                     | 6.12  | -     |             |    |
|                              |  | $T_{vj}=150^{\circ}C$   | -                     | 7.21  | -     |             |    |
| $E_{off}$                    | Turn-off energy (per pulse)            | $T_{vj}=25^{\circ}C$  | -                     | 0.72  | -     |             |    |
|                              |  | $T_{vj}=125^{\circ}C$   | -                     | 2.32  | -     |             |    |
|                              |  | $T_{vj}=150^{\circ}C$   | -                     | 2.40  | -     |             |    |
| SC data                      | Short-circuit current                  | $V_{CC}=600V, V_{GE}\leq 15V, T_{vj}=125^{\circ}C$<br>$V_{CES}\leq 1200V, t_p\leq 10\mu s$      | -                     | 90    | -     | A           |    |
| $R_{thJC}$                   | Thermal resistance, junction to case   | Per IGBT  | -                     | -     | 0.95  | K/W         |    |
| $R_{thCH}$                   | Thermal resistance, case to heatsink   | Per IGBT $\lambda_{grease}=1W/(m\cdot K)$   | -                     | 0.52  | -     | K/W         |    |
| $T_{vjop}$                   | Temperature under switching conditions |   | -40                   |       | 150   | $^{\circ}C$ |    |
| <b>Diode, Brake-Chopper</b>  |  |   |                       |       |       |             |    |
| <b>Maximum Rated Values</b>  |  |   |                       |       |       |             |    |
| Symbol                       | Item                                   | Conditions  | Rating                |       |       | Unit        |    |
| $V_{RRM}$                    | Repetitive peak reverse voltage        | $T_{vj}=25^{\circ}C$  | 1200                  |       |       | V           |    |
| $I_F$                        | Forward current, DC                    | $T_C=80^{\circ}C, T_{vj}=175^{\circ}C$  | 15                    |       |       | A           |    |
| $I_{FRM}$                    | Repetitive peak forward current        | $t_p=1ms$   | 30                    |       |       | A           |    |
| $I^2t$                       | $I^2t$ -value                          | $V_R=0V, t_p=10ms, T_{vj}=125^{\circ}C$   | 166                   |       |       | $A^2s$      |    |
| <b>Characteristic Values</b> |  |   |                       |       |       |             |    |
| $V_F$                        | Continuous forward voltage             | $I_F=15A$<br>$V_{GE}=0V$  | $T_{vj}=25^{\circ}C$  | -     | 2.13  | 2.8         | V  |
|                              |  |   | $T_{vj}=125^{\circ}C$ | -     | 1.82  | -           |    |
|                              |  |   | $T_{vj}=150^{\circ}C$ | -     | 1.78  | -           |    |

|                   |  |  |                        |      |       |     |    |
|-------------------|--|--|------------------------|------|-------|-----|----|
| I <sub>RM</sub>   | Peak reverse recovery current          | V <sub>R</sub> =600V<br>I <sub>F</sub> =25A<br>V <sub>GE</sub> =-15V<br>-di <sub>F</sub> /dt=440A/us<br>(T <sub>vj</sub> =150°C) | T <sub>vj</sub> =25°C  | -    | 13.6  | -   | A  |
|                   |  |  | T <sub>vj</sub> =125°C | -    | 14.7  | -   |    |
|                   |  |  | T <sub>vj</sub> =150°C | -    | 14.8  | -   |    |
| t <sub>rr</sub>   | Reverse recovery time                  |  | T <sub>vj</sub> =25°C  | -    | 99.9  | -   | ns |
|                   |  |  | T <sub>vj</sub> =125°C | -    | 539.1 | -   |    |
|                   |  |  | T <sub>vj</sub> =150°C | -    | 603.2 | -   |    |
| Q <sub>r</sub>    | Recovered charge                       |  | T <sub>vj</sub> =25°C  | -    | 0.38  | -   | μC |
|                   |  |  | T <sub>vj</sub> =125°C | -    | 5.45  | -   |    |
|                   |  |  | T <sub>vj</sub> =150°C | -    | 5.81  | -   |    |
| E <sub>rec</sub>  | Reverse recovery energy                | T <sub>vj</sub> =25°C  | -                      | 0.03 | -     | mJ  |    |
|                   |  | T <sub>vj</sub> =125°C   | -                      | 1.92 | -     |     |    |
|                   |  | T <sub>vj</sub> =150°C   | -                      | 2.07 | -     |     |    |
| R <sub>thJC</sub> | Thermal resistance, junction to case   | per diode  | -                      | -    | 1.5   | K/W |    |
| R <sub>thCH</sub> | Thermal resistance, case to heatsink   | Per diode, λ <sub>grease</sub> =1 W/(m·K)  | -                      | 0.82 | -     | K/W |    |
| T <sub>vjop</sub> | Temperature under switching conditions |  | -40                    |      | 150   | °C  |    |

Note:

IGBT electrical characteristics according to IEC 60747 – 9

Diode electrical characteristics according to IEC 60747 – 2

#### NTC Thermistor Characteristics

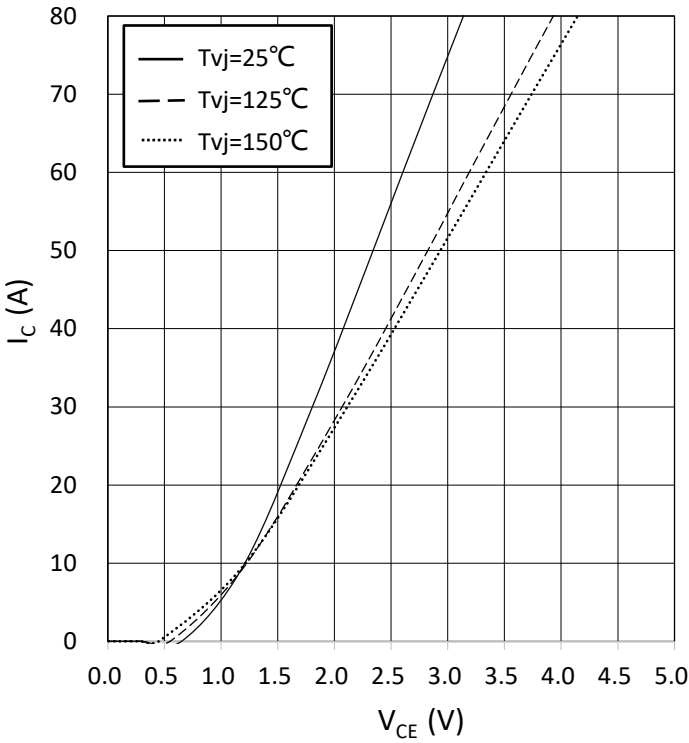
| Symbol              | Item                    | Conditions   | Values |      |      | Unit |
|---------------------|-------------------------|--|--------|------|------|------|
|                     |                         |  | Min.   | Typ. | Max. |      |
| R <sub>25</sub>     | Rated resistance        | T <sub>C</sub> =25°C   | -      | 5    | -    | kΩ   |
| ΔR/R                | Deviation of resistance | T <sub>C</sub> =100°C, R <sub>100</sub> =493Ω  | -5     | -    | 5    | %    |
| P <sub>25</sub>     | Power dissipation       | T <sub>C</sub> =25°C   | -      | -    | 20   | mW   |
| B <sub>25/50</sub>  | B-constant              | R <sub>2</sub> =R <sub>25</sub> exp[B <sub>25/50</sub> (1/T <sub>2</sub> -1/(298.15K))]  | -      | 3375 | -    | K    |
| B <sub>25/80</sub>  | B-constant              | R <sub>2</sub> =R <sub>25</sub> exp[B <sub>25/80</sub> (1/T <sub>2</sub> -1/(298.15K))]  | -      | 3411 | -    |      |
| B <sub>25/100</sub> | B-constant              | R <sub>2</sub> =R <sub>25</sub> exp[B <sub>25/100</sub> (1/T <sub>2</sub> -1/(298.15K))] | -      | 3433 | -    |      |

#### Module

| Symbol             | Item                           | Conditions                                     | Rating  |      |      | Unit |
|--------------------|--------------------------------|--|---------|------|------|------|
|                    |                                |  | Min.    | Typ. | Max. |      |
| V <sub>ISOL</sub>  | Isolation voltage              | Terminals to baseplate,<br>RMS, f=50Hz, t=1min | 2500    |      |      | V    |
| T <sub>vjmax</sub> | Maximum junction temperature   | -  | 175     |      |      | °C   |
| T <sub>vjop</sub>  | Operating junction temperature | Continuous operationg(under switching)         | -40~150 |      |      | °C   |
| T <sub>stg</sub>   | Storage temperature            | -  | -40~125 |      |      | °C   |
| Symbol             | Item                           | Conditions                                     | Values  |      |      | Unit |
|                    |                                |  | Min.    | Typ. | Max. |      |
| Ms                 | Mounting torque                | Mounting to heat sink, M5 screw                | 3       | -    | 6    | Nm   |
| ds                 | Creepage distance              | Terminal to terminal                           | -       | -    | -    | mm   |
|                    |                                | Terminal to base plate                         | -       | 10   | -    |      |
| da                 | Clearance                      | Terminal to terminal                           | -       | -    | -    | mm   |
|                    |                                | Terminal to base plate                         | -       | 7.5  | -    |      |
| m                  | Weight                         | -  | -       | 175  | -    | g    |

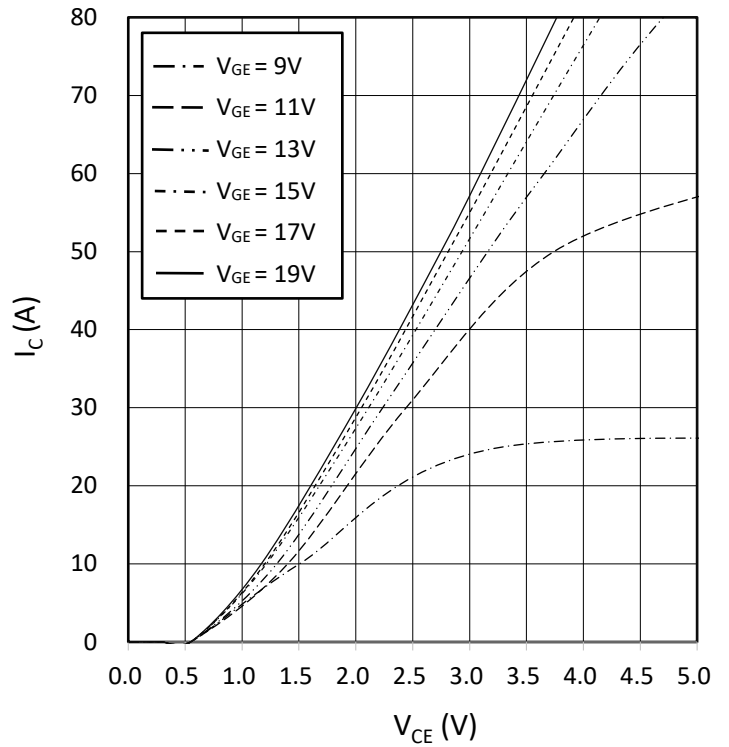
**output characteristic IGBT,Inverter (typical)**

$I_C = f(V_{CE})$   
 $V_{GE} = 15V$



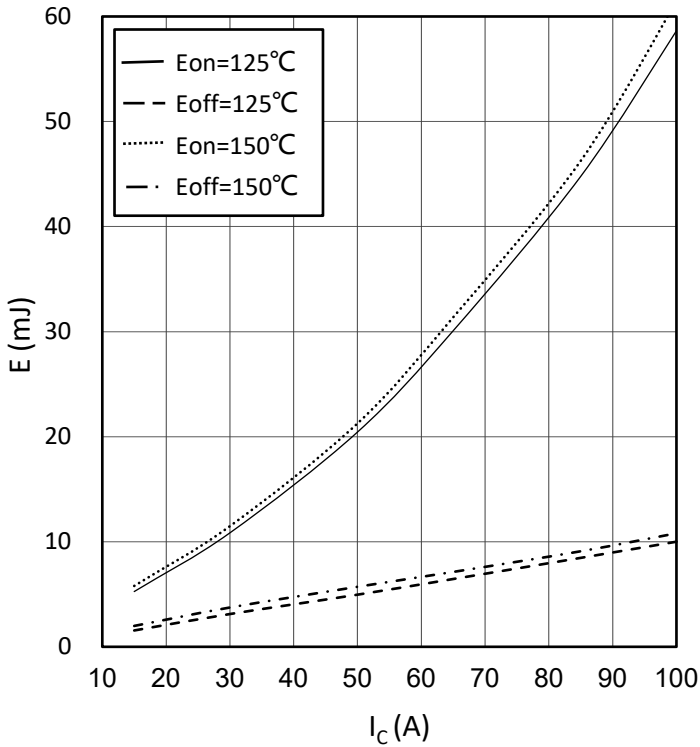
**output characteristic IGBT,Inverter (typical)**

$I_C = f(V_{CE})$   
 $T_{vj} = 150^\circ C$



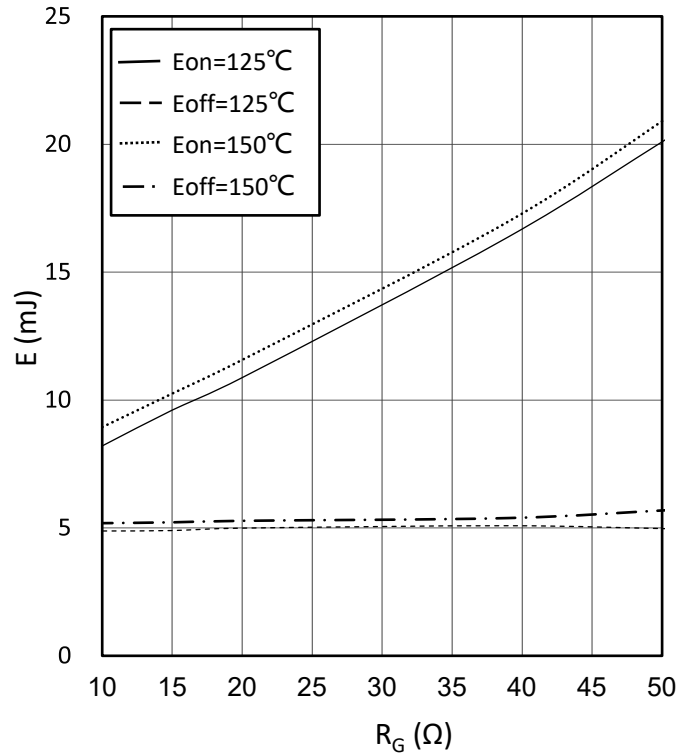
**switching losses IGBT,Inverter (typical)**

$E_{on} = f(I_C)$ ,  $E_{off} = f(I_C)$   
 $V_{GE} = \pm 15V$ ,  $R_{Gon} = 51\Omega$ ,  $R_{Goff} = 51\Omega$ ,  $V_{CE} = 600V$



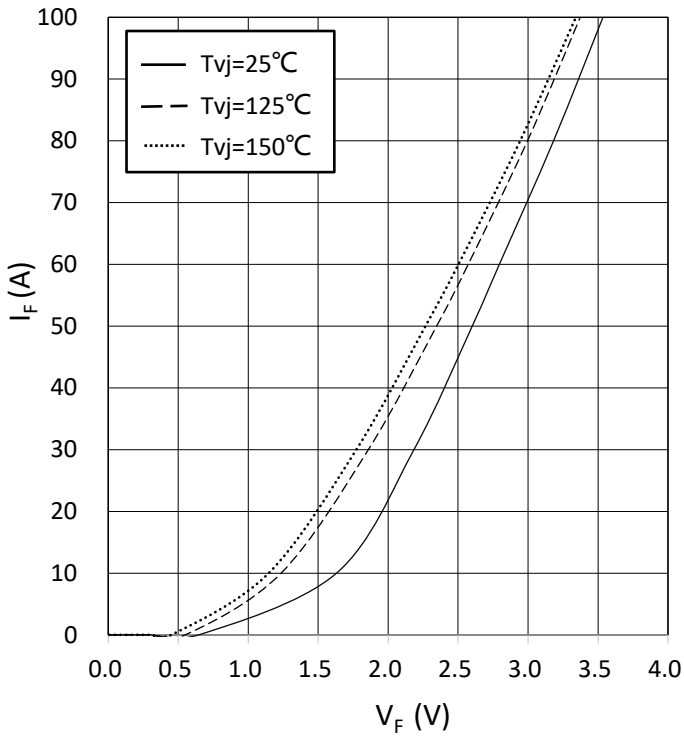
**switching losses IGBT,Inverter (typical)**

$E_{on} = f(R_G)$ ,  $E_{off} = f(R_G)$   
 $V_{GE} = \pm 15V$ ,  $I_C = 50A$ ,  $V_{CE} = 600V$



**forward characteristic of Diode, Inverter (typical)**

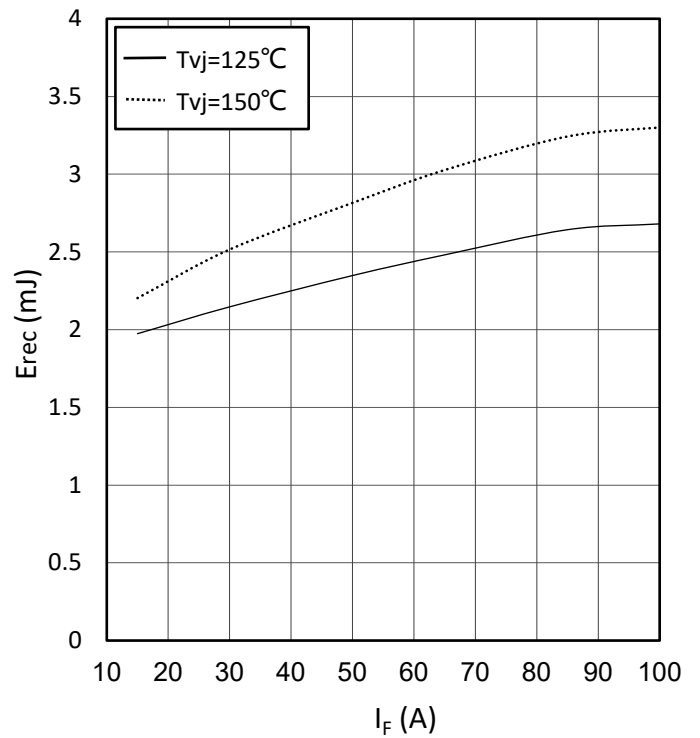
$I_F = f(V_F)$



**switching losses Diode, Inverter (typical)**

$E_{rec} = f(I_F)$

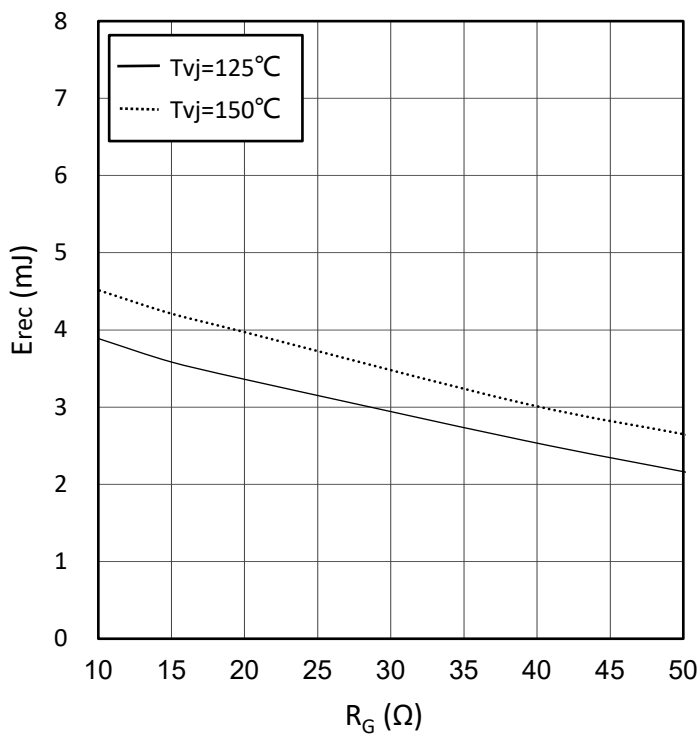
$R_{Gon} = 51\Omega, V_{CE} = 600\text{ V}$



**switching losses Diode, Inverter (typical)**

$E_{rec} = f(R_G)$

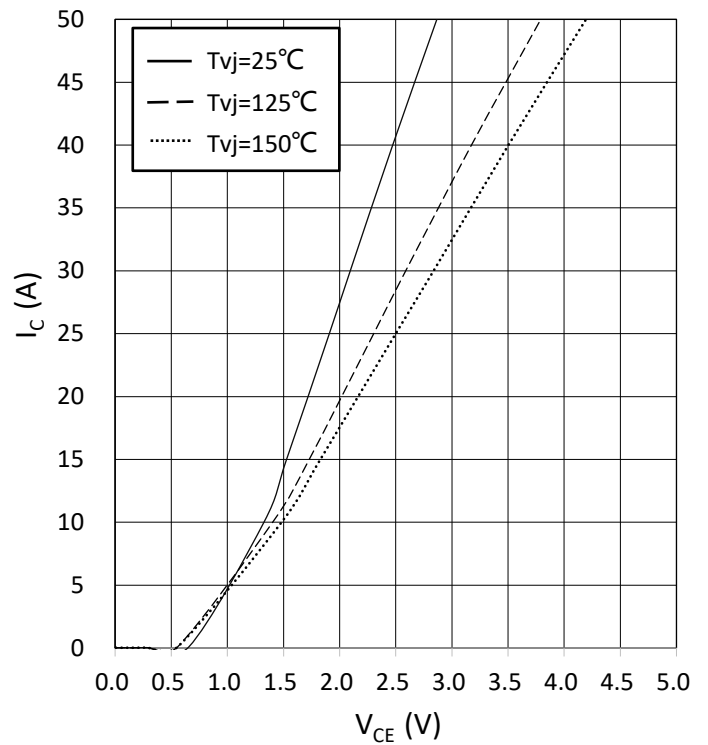
$I_F = 50\text{A}, V_{CE} = 600\text{V}$



**output characteristic IGBT, Brake-Chopper (typical)**

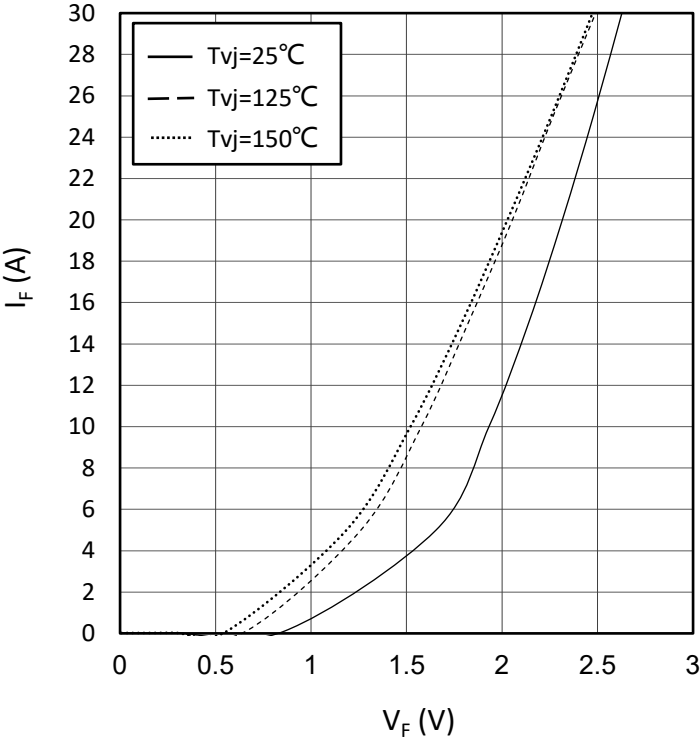
$I_C = f(V_{CE})$

$V_{GE} = 15\text{V}$



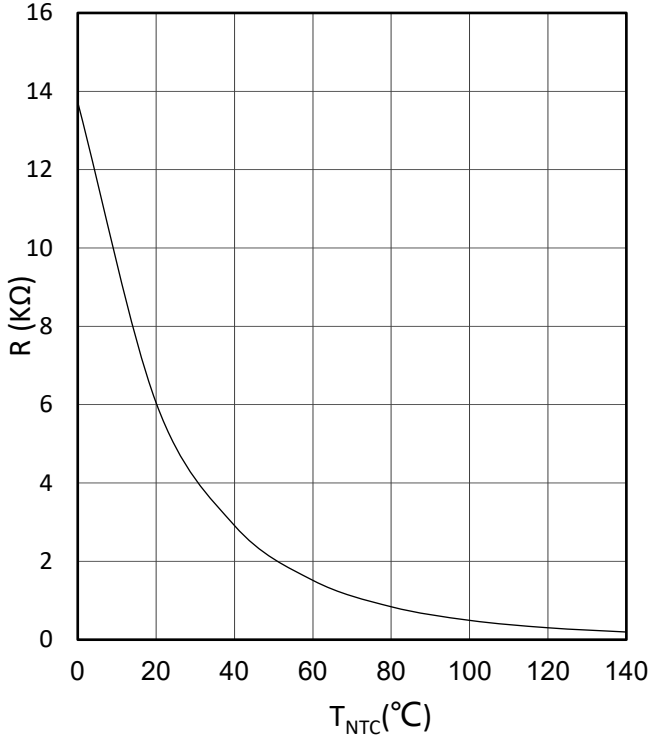
forward characteristic of Diode, Brake-Chopper (typical)

$I_F = f(V_F)$



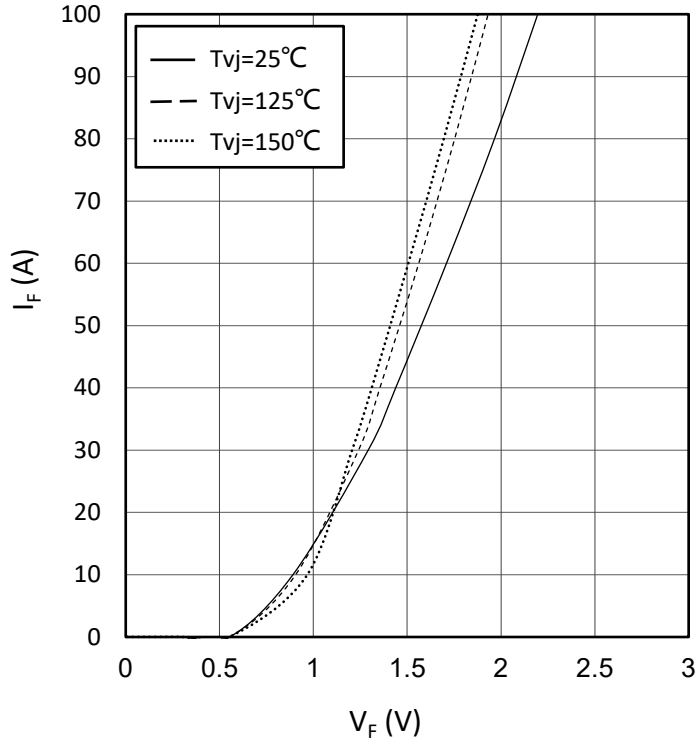
NTC-Thermistor-temperature characteristic(typical)

$R=f(T)$



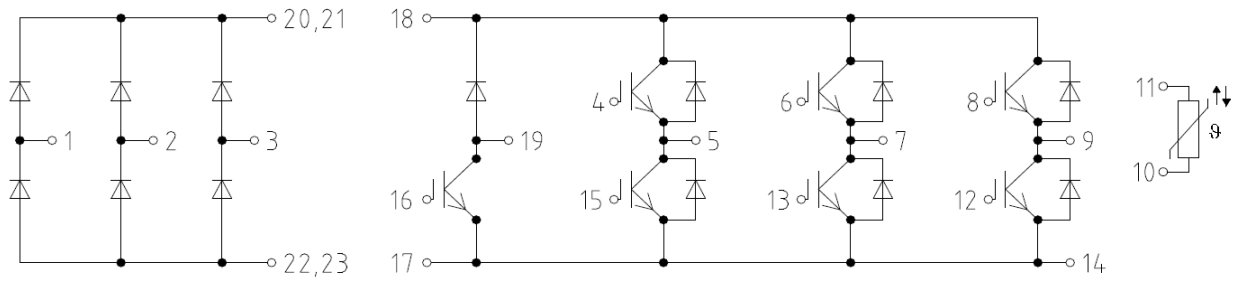
Forward characteristic of Diode, Rectifier(typical)

$I_F = f(V_F)$

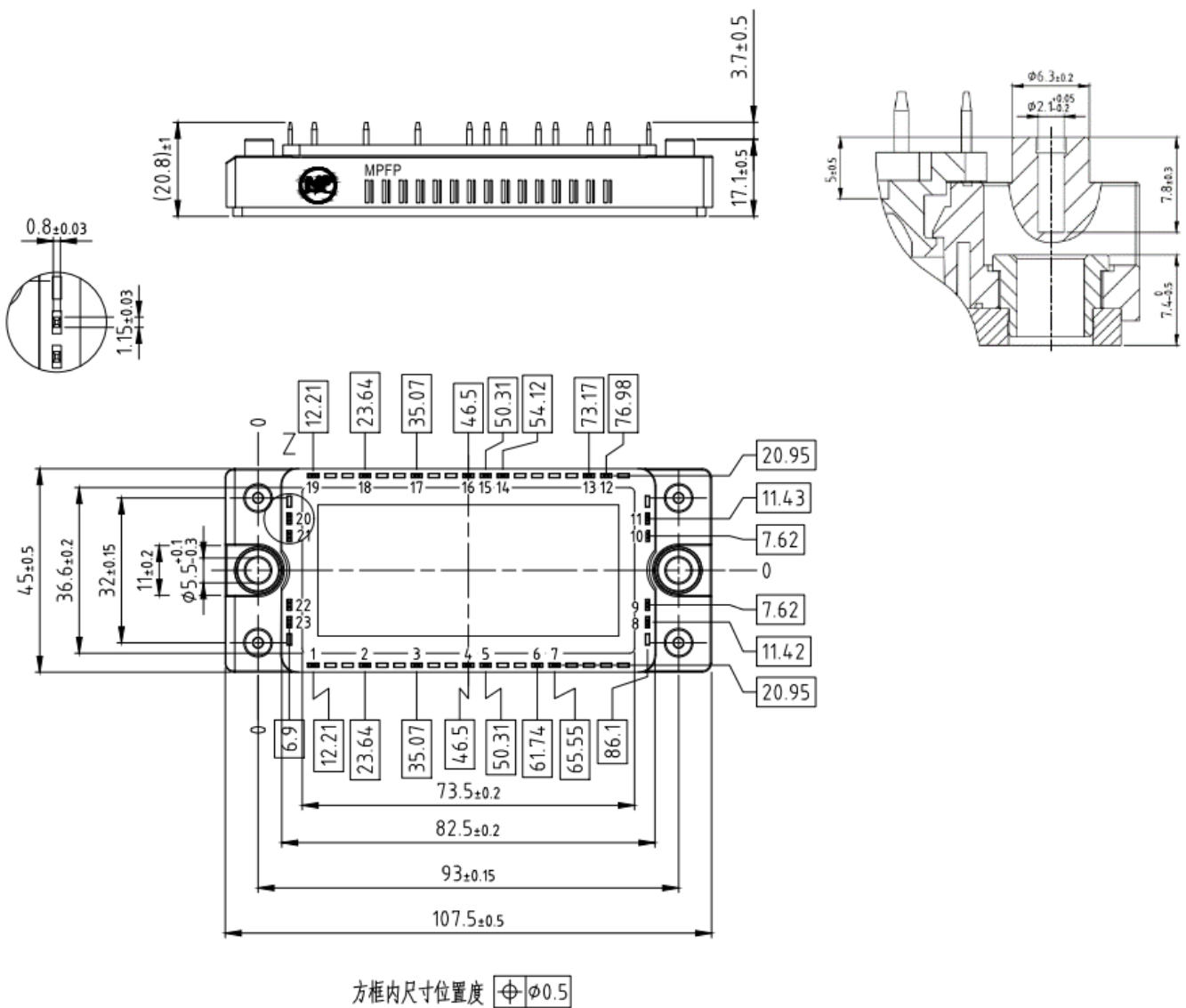




Circuit Diagram



Package Outlines



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| 序号<br>Item | 日期<br>Date | 变更记录及描述<br>Change History Description | 版本序号<br>Rev. item | 经办人<br>Responsibility |
|------------|------------|---------------------------------------|-------------------|-----------------------|
| 1          | 23.4.15    | 更新实物图、尺寸图。版本变更为1.3。                   | 2023 4 Ver1.3     | 梁华文                   |